ASTM A334 Gr.6 seamless steel tubes

ASTM A334 Gr.6 seamless steel tubes are low temperature carbon steel tubes that are used for transporting fluids at low temperatures.

ASTM A334 Gr.6 seamless steel tubes are suitable for use in boilers, pressure vessels, and heat exchangers. They are manufactured using high-quality carbon steel and are designed to withstand low temperatures and high pressure. These tubes have excellent dimensional accuracy and are available in different sizes and thicknesses to meet the specific requirements of different applications. ASTM A334 Gr.6 seamless steel tubes have good welding properties and can be welded easily without any distortion or cracking.

Note: **Mill test certificates will be issued according to EN10204.3 3.1 or 3.2**

Packing:

- Packed in wooden box or bundles protected with plastic paper, and suitably protected for sea-worthily delivery or as requested.
- The Product marking shall include the ASTM A334 or ASME SA334, Grade, size, heat no., Lot No. and Manufacture name or logo.

ASTM A334 specification covers standard specification for several grades of minimum-wall-thickness, seamless and welded, carbon and alloy-steel tubes intended for use at low temperatures. The steel shall conform to the required chemical composition for carbon, manganese, phosphorus, sulfur, silicon, nickel, chromium, copper, cobalt, and molybdenum. The number of tubes in a heat-treatment lot shall be determined from the size of the tubes. The tubes shall have a hardness number that does not exceed the prescribed Rockwell and Brinell hardness values. Several grades of steel shall conform to the following tensile properties: tensile strength, yield strength, and elongation. For Grades 1, 3, 6, 7, and 9, the notch-bar impact properties of each set of three impact specimens, including specimens for the welded joint in welded pipe, shall not be less than the prescribed values. Several mechanical tests shall be conducted, namely: flattening test; flare test (seamless tubes); flange test (welded tubes); reverse flattening test; hardness test; and impact tests. Hydrostatic or nondestructive electric test shall also be performed. Materials shall be tested for impact resistance at the prescribed temperature for the respective grades. Impact temperature reduction values shall be by any amount equal to the difference between the temperature reduction corresponding to the actual material thickness and the temperature reduction corresponding to Charpy specimen width actually tested.

Scope

1.1 This specification2 covers several grades of minimum-wall-thickness, seamless and welded, carbon and alloy-steel tubes intended for use at low temperatures. Some product sizes may not be available under this specification because heavier wall thicknesses have an adverse affect on low-temperature impact properties.

1.2 Supplementary Requirement S1 of an optional nature is provided. This shall apply only when specified by the purchaser.

NOTE 1: For tubing smaller than 1/2 in. [12.7 mm] in outside diameter, the elongation values given for strip specimens in Table 1 shall apply. Mechanical property requirements do not apply to tubing smaller than 1/8 in. [3.2 mm] in outside diameter and with a wall thickness under 0.015 in. [0.4 mm].

1.3 The values stated in either inch-pound units or SI units are to be regarded separately as standard. Within the text, the SI units are shown in brackets. The values stated in each system are not exact equivalents; therefore, each system must be used independently of the other. Combining values from the two systems may result in nonconformance with the specification. The inch-pound units shall apply unless the “M” designation of this specification is specified in the order.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

What is ASTM A333 Grade 6 pipe equivalent to?

ASTM A333 Grade 6 pipe is equivalent to several international standards including EN/DIN 10216-2, BS 3059 Part 2, and ASME SA-106.

ASTM A334 / ASME SA334 Grade 6 Chemical Compositions

Standard	Grade	Chemical Components (%)					
		C	Si	Mn	P	S	Ni
ASTM A334/ ASME SA334	GR.6	≤0.30	≥0.10	0.29-1.06	≤0.025	≤0.025	/

Mechanical Tests Required

Standard	Grade	Mechanical Properties			
		Tensile Strength (Mpa)	Yield Strength (Mpa)	Elongation (%)	The Low degree of Temperature test
ASTM A334/ ASME SA334	Gr.6	≥415	≥240	≥30	-45°

Maximum Hardness Number

Grade	Rockwell	Brinell
ASTM A334 Grade 6	B90	190

A334 GR.6 Impact requirements

Size of Specimen, mm	Minimum Average Notched Bar Impact Value of. Each Set of Three Specimens		Minimum Notched Bar Impact Value of One Specimen Only of a Set	
	ft·lbf	J	ft·lbf	J
10 by 10	13	18	10	14
10 by 7.5	10	14	8	11
10 by 6.67	9	12	7	9
10 by 5	7	9	5	7
10 by 3.33	5	7	3	4
10 by 2.5	4	5	3	4

A334 GR.6 Impact Temperature Reduction:

Specimen Width Along Notch or Accrual Material Thickness		**Temperature Reduction, Degrees Colder**	
In.	**mm**	℉	℃
0.394	10（Standard size)	0	0
0.354	9	0	0
0.315	8	0	0
0.295	7.5(3/4 std. size)	5	3
0.276	7	8	4
0.262	6.67(2/3 std. sze)	10	5
0.236	6	15	8
0.197	5(1/2 std. size)	20	11
0.158	4	30	17
0.131	3.33(1/3 std. size)	35	19
0.118	3	40	22
0.099	2.5(1/4 std. size)	50	28

Other Mechanical tests as follows:

l Flattening Test One flattening test shall be made on specimens from each end of one finished tube of each lot.

l Flare Test (Seamless Tubes) One flare test shall be made on specimens from each end of one finished tube of each lot.

l Flange Test (Welded Tubes) One flange test shall be made on specimens from each end of one finished tube of each lot.

l Reverse Flattening Test For welded tubes, one re- verse flattening test shall be made on a specimen from each 1500 ft [460 m] of finished tubing.

l Hardness Test Brinell or Rockwell hardness tests shall be made on specimens from two tubes from each lot (Note 3).

l Impact Tests One notched-bar impact test, consisting of breaking three specimens, shall be made from each heat represented in a heat-treatment load on specimens taken from the finished tube.

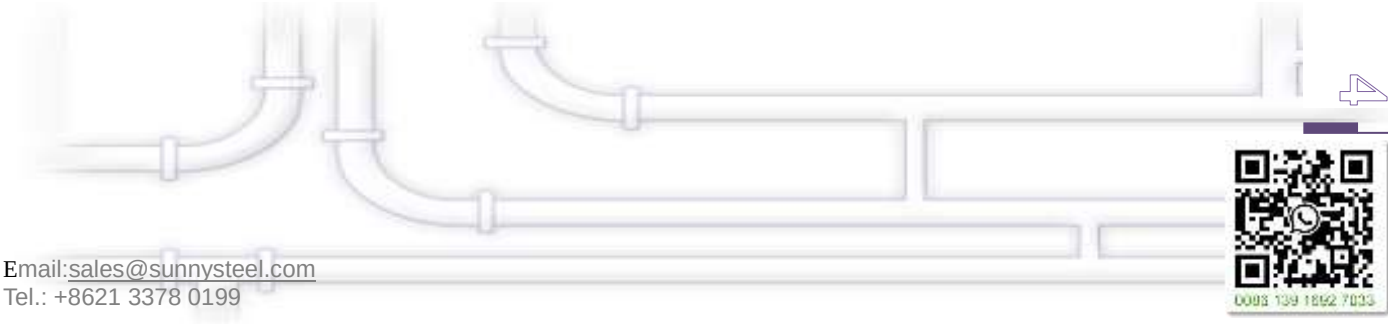
ASTM A334 / ASME SA334 GR.6 tubes Hydrostatic or NDT test

Each A334 GR.6 tube shall be subjected to the nondestructive electric test or the hydrostatic test. The type of test to be used shall be at the option of the manufacturer, unless otherwise specified in the purchase order.

Heat Treatment

All A334 GR.6 seamless and welded tubes, other than Grades 8 and 11, shall be treated to control their microstructure in Accor- dance with one of the following methods:

- Normalize by heating to a uniform temperature of not less than 1550°F [845°C] and cool in air or in the cooling chamber of an atmosphere-controlled furnace.
- Normalize as in standard 10.1.1, and, at the discretion of the manufacturer, reheat to a suitable tempering temperature.
- For the seamless process only, reheat and control hot working and the temperature of the hot-finishing operation to a finishing temperature range from 1550 to 1750°F [845 to 955°C] and cool in a controlled atmosphere furnace from an initial temperature of not less than 1550°F [845°C].
- Treat as in 6.1.3 and, at the discretion of the manufacturer, reheat to a suitable tempering temperature.



Referenced Documents

- A 370 Test Methods and Definitions for Mechanical Testing of Steel Products
- A 450/A450M Specification for General Requirements for Carbon, Ferritic Alloy, and Austenitic Alloy Steel Tubes3
- E 23 Test Methods for Notched Bar Impact Testing of Metallic Materials5

Ordering Information

ASTM ASME A/SA334 GR.6 Seamless Tubes Orders for material under this specification should include the following, as required, to describe the material adequately:

- Quantity (feet, centimeters, or number of lengths),
- Name of material (seamless or welded pipe),
- Grade
- Size (outside diameter and minimum wall thickness),
- Length (specific or random)
- Optional requirements, (other temperatures, Section 13; hydrostatic or electric test, Section 15),
- Test report required, (Certification Section of Specification A 450/A 450M),
- Specification designation,
- Special requirements and any supplementary requirements selected.

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